

Tassilo Wald

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Research Interest:

My research revolves around machine learning and its application in medical image analysis. Specifically, I'm interested in understanding the similarities and differences between deep neural networks to make ensembles more robust and prevent silent failures. Lately, I've also been exploring the potential of 3D vision foundation models for radiology, thanks to the advancements of SAM and SEEM.

Education:

German Cancer Research Center (DKFZ), MIC

Apr. 2020 - present

PhD Student under Prof. Klaus Maier-Hein

- Working on understanding, comparing and diversification of learned representations in medical and natural images
- Application, optimization and deployment of segmentation methods to clinical projects and me to medical segmentation challenges
- Recently, shifting focus towards building a 3D medical vision foundation model
- Member of five internal advisory committees of PhD students and of five Master students

Karlsruhe Institute of Technology (KIT)

Apr 2016 – Aug. 2019

M.Sc. in Electrical Engineering and Information Theory

- Master's Thesis: "Combination of Temporal and Spatial Information Extraction Within a CNN for Improving Object Detection" at FZI, Research Center for Information Technology
- Specialization in control theory and machine learning

Karlsruhe Institute of Technology (KIT)

Oct 2012 – Aug. 2016

B.Sc. in Electrical Engineering and Information Theory

- Bachelor's Thesis: „Navigation and control of a flight robot with tiltable rotors using a LASER aided navigation system“ at ITE, Institute of Systems Optimization
- Referent at 18th Conference of Young scientist "Navigation and Motion Control"
- Participation in "International Workshop on Navigation and Motion Control"

Other Research Experience:

FZI Research Center for Information Technology, Karlsruhe

Oct. 2019 – Mar. 2020

Student Assistant

- Conference preparation of 2D+t object detection method
- Development of dynamic weighting scheme for object detection loss objective

Bosch Japan, Yokohama

Dec. 2017 – Apr. 2018

Intern in the Engineering Application Product Department

- Automation of brake assistant validation and testing workflow
- Neural network classification for ultrasound brake assistant

Institute of Systems Optimization (ITE), Karlsruhe

Jun. 2015 – Dec. 2016:

Student Assistant

- Microcontroller software development
- System integration of tilt-rotor quadcopter
- Conducting experiments and evaluating

Publications:

1. **[MICCAI 2023]** Constantin Ulrich, Fabian Isensee, Tassilo Wald, Maximilian Zenk, Michael Baumgartner, Klaus H. Maier-Hein. "MultiTalent: A Multi-Dataset Approach to Medical Image Segmentation," *International Conference on Medical Image Computing and Computer-Assisted Intervention*, 2023 [\[PDF\]](#), **(Oral)**
2. **[MICCAI 2023]** Silvia D. Almeida*, Carsten T. Lüth*, Tobias Norajitra, Tassilo Wald, Marco Nolden, Paul F. Jaeger, Claus P. Heussel, Jürgen Biederer, Oliver Weinheimer, Klaus H. Maier-Hein. "cOOpD: Reformulating COPD classification on chest CT scans as anomaly detection using contrastive representations," *International Conference on Medical Image Computing and Computer-Assisted Intervention*, 2023 [\[PDF\]](#)
3. **[WACV 2024]** Gregor Köhler, Tassilo Wald, Constantin Ulrich, David Zimmerer, Paul F. Jaeger, Jörg K. H. Franke, Simon Kohl, Fabian Isensee, Klaus H. Maier-Hein. "RecycleNet: Latent Feature Recycling Leads to Iterative Decision Refinement," *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, 2024. [\[PDF\]](#)
4. **[SCIS 2023]** Tassilo Wald, Constantin Ulrich, Fabian Isensee, David Zimmerer, Gregor Köhler, Michael Baumgartner, Klaus H. Maier-Hein. "Exploring new ways: Enforcing representational dissimilarity to learn new features and reduce error consistency," *Workshop on Spurious Correlations, Invariance and Stability (SCIS) at ICML*, 2023. [\[PDF\]](#)
5. **[BVM 2023]** Marc K. Ickler*, Michael Baumgartner*, Saikat Roy, Tassilo Wald, Klaus H. Maier-Hein. „Taming Detection Transformers for Medical Object Detection," *Bildverarbeitung für die Medizin (BVM)*, 2023. **(Nominated for best paper & Oral)** [\[PDF\]](#)
6. **[MIDL short 2023]** Saikat Roy*, Tassilo Wald*, Gregor Köhler*, Maximilian R. Rokuss*, Nico Disch*, Julius Holzschuh*, David Zimmerer*, Klaus H. Maier-Hein. "SAM.MD: Zero-shot medical image segmentation capabilities of the Segment Anything Model," *Medical Imaging with Deep Learning (MIDL), short paper track*, 2023. [\[PDF\]](#)
7. **[BVM 2023]** Fabian Isensee*, Constantin Ulrich*, Tassilo Wald*, Klaus H. Maier-Hein. "Extending nnU-Net is all you need," *Bildverarbeitung für die Medizin (BVM)*, 2023. **(Oral)** [\[PDF\]](#)
8. **[NOA 2022]** Irada Pflueger*, Tassilo Wald*, Fabian Isensee, Marianne Schell, Hagen Meredig, Kai Schlamp, Denise Bernhardt, Gianluca Brugnara, Claus Peter Heußel, Juergen Debus, Wolfgang Wick, Martin Bendszus, Klaus H. Maier-Hein, Philip Vollmuth. "Automated detection and quantification of brain metastases on clinical MRI data using artificial neural networks," *Neuro-Oncology Advances*, 4(1), 2022. [\[PDF\]](#)
9. **[IV 2021]** Michael Weber, Tassilo Wald, J. Marius Zöllner, „Temporal Feature Networks for CNN based Object Detection", *IEEE Intelligent Vehicles Symposium*, 2021. [\[PDF\]](#)

Challenges & Hackathons:

1. **[MICCAI Challenge] 1st place of 13**
Jonathan Deissler*, Tassilo Wald*, "Mediastinal Lymph Node Quantification (LNQ): Segmentation of Heterogeneous CT Data," 2023 [\[Grand Challenge\]](#)
2. **[MICCAI Challenge] 1st place of 20**
Fabian Isensee*, Constantin Ulrich*, Tassilo Wald*, "Abdominal Multi-Organ Segmentation (AMOS) Challenge", 2022 [\[Grand Challenge\]](#)
3. **[HiDA Hackathon] 1st place of 4**
Tassilo Wald*, Michael Baumgartner*, Gregor Köhler*, "AI-HERO Hackathon for Energy-Efficient AI", 2022 [\[Link\]](#)

Services & Activities:

- Part of the [Heidelberg.ai](#) non-profit organization for researchers in the field of Artificial Intelligence team.
- Reviewer for Unifying Representations in Neural Models (UniReps) workshop hosted at NeurIPS 2023, Bildverarbeitung für die Medizin (BVM) 2020-2022, Medical Image Computing and Computer-Assisted Intervention (MICCAI) 2021-2022 (allegedly), Nature methods 2022-2023 (allegedly).
- Maintainer of nnU-Net, a self-configuring method for 3D medical image segmentation, since 2023.
- Tutorial Speaker on "Multi Task Learning in medicine" in the scope of the "Advanced Deep Learning" Tutorial for BVM 2022.
- Scholarship holder of "Deutschlandstipendium" awarded to 300 engaging and talented students out of 23.920 enrolled students in KIT 2017-2018.